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INSECT PEST SURVEY

Bureau of Entomology, U. S. D. A.

State Entomological Agencies, cooperating.

Special Report No. 14

June 15, 1921.

Western Army Cutworm

~~Varied Cutworm~~

Euxoa auxiliaris Grote

~~Euxoa auxiliaris~~

Dr. F. A. Fenton of the Iowa Agricultural Experiment Station reports that: Moths of the variegated cutworm are appearing in the western and southern counties of this State by the millions. The infested region lies west of a line running from the northwestern corner of Dickinson County, to the middle of Hardin County, thence to the middle of Dallas County, and south of a line extending from the north central border of Madison County, along the southern borders of Mahaska and Keokuk Counties; thence in a northeasterly direction across the center of Washington County, to the southern third of Clinton County. The Survey reports are not yet completed, but indications are that the pest will be much more numerous than two years ago. We have received reports of this same pest from Kansas and Nebraska.

REVIEW OF THE PROBLEMS

1. In Fig. 1, the two charges

are at a distance a from each other.

What is the

total potential?

2. A charge q is at

the center of a sphere of radius R .

Find the total potential.

With the help of Fig. 2, show that if q is at a point in the interior

of a sphere of radius R , then the potential outside the sphere

is the same as if the charge were located at the center of the sphere.

3. If a charge q is located outside a sphere of radius R , then the potential

at a point inside the sphere is given by $V = q(1/r_1 - 1/r_2)$, where r_1 is the

distance of the point from the center of the sphere and r_2 is the distance of the point from the surface of the sphere.

With the help of Fig. 3, show that if q is located inside the sphere, the potential at a point outside the sphere is given by $V = q(1/r_1 - 1/r_2)$,

where r_1 is the distance of the point from the center of the sphere and r_2 is the distance of the point from the surface of the sphere.

4. If a charge q is located inside a sphere of radius R , then the potential at a point outside the sphere is given by $V = q(1/r_1 - 1/r_2)$,

where r_1 is the distance of the point from the center of the sphere and r_2 is the distance of the point from the surface of the sphere.

5. If a charge q is located outside a sphere of radius R , then the potential at a point inside the sphere is given by $V = q(1/r_1 - 1/r_2)$,

where r_1 is the distance of the point from the center of the sphere and r_2 is the distance of the point from the surface of the sphere.